

rinsing the developing solution from the portion of the resist film by a rinsing liquid to which ultrasonic vibration is applied.

☐ Please add the following new claims 5-32.

~~25.~~ The method of Claim 1, wherein the ultrasonic vibration ranges from 40 kHz to 50 kHz.

~~26.~~ The method according to claim 1, wherein the developing solution is an alkaline developing solution.

~~37.~~ The method according to claim 1, wherein the alkaline developing solution includes tetramethylammonium hydroxide.

~~48.~~ The method according to claim 1, further comprising:  
exposing the resist film to light passing through a mask before supplying the developing solution.

~~59.~~ The method according to claim 1, further comprising:  
baking the resist film at a first temperature before exposing the resist film to the light; and

baking the resist film at a second temperature after exposing the resist film to the light, wherein the second temperature is different from the first temperature.

~~610.~~ The method according to claim 1, wherein the second temperature is lower than the first temperature.

~~711.~~ The method according to claim 1, further comprising:

irradiating the resist film with an electron beam using an electron beam lithography technique before supplying the developing solution on the resist film.

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~~12~~The method according to claim ~~11~~<sup>8</sup>, further comprising:

baking the resist film at a first temperature before irradiating the resist film with the electron beam; and

baking the resist film at a second temperature after irradiating the resist film with the electron beam, wherein the second temperature is different from the first temperature.

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The method according to claim ~~12~~<sup>9</sup>, wherein the second temperature is lower than the first temperature.

14. The method according to claim 1, wherein the semiconductor substrate and the resist film formed thereon are submerged in a rinsing container, the rinsing liquid being supplied in the rinsing container.

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The method according to claim 1, wherein the ultrasonic vibration is applied to the developing solution.

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The method according to claim 1, wherein the rinsing liquid is pure water.

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A method for fabricating a semiconductor device, comprising:

- preparing a semiconductor substrate;
- forming a resist film on the semiconductor substrate;
- supplying a developing solution on the resist film for patterning the resist film, whereby a patterned resist film is formed on the semiconductor substrate;
- providing a rinsing liquid on the semiconductor substrate on which the patterned resist film is formed; and
- applying ultrasonic vibration to the rinsing liquid.

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The method according to claim ~~17~~<sup>13</sup>, wherein the ultrasonic vibration ranges from 40 kHz to 50 kHz.

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13. <sup>15</sup>~~19~~. The method according to claim <sup>9</sup>~~17~~, wherein the developing solution is an alkaline developing solution.

14. <sup>13</sup>~~16~~. The method according to claim <sup>13</sup>~~19~~, wherein the alkaline developing solution includes tetramethylammonium hydroxide.

15. <sup>9</sup>~~17~~. The method according to claim <sup>9</sup>~~17~~, further comprising:  
exposing the resist film to light passing through a mask before supplying the developing solution.

16. <sup>15</sup>~~18~~. The method according to claim <sup>15</sup>~~21~~, further comprising:  
baking the resist film at a first temperature before exposing the resist film to the light; and

baking the resist film at a second temperature after exposing the resist film to the light, wherein the second temperature is different from the first temperature.

17. <sup>18</sup>~~19~~. The method according to claim <sup>18</sup>~~22~~, wherein the second temperature is lower than the first temperature.

18. <sup>9</sup>~~20~~. The method according to claim <sup>9</sup>~~17~~, further comprising:  
irradiating the resist film with an electron beam using an electron beam lithography technique before supplying the developing solution on the resist film.

19. <sup>18</sup>~~21~~. The method according to claim <sup>18</sup>~~24~~, further comprising:  
baking the resist film at a first temperature before irradiating the resist film with the electron beam; and

baking the resist film at a second temperature after irradiating the resist film with the electron beam, wherein the second temperature is different from the first temperature.

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The method according to claim ~~25~~, wherein the second temperature is lower than the first temperature.

27. The method according to claim 17, wherein the semiconductor substrate and the resist film formed thereon are submerged in a rinsing container, the rinsing liquid being supplied in the rinsing container.

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The method according to claim ~~17~~, wherein the ultrasonic vibration is applied to the developing solution.

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29. The method according to claim 17, wherein the rinsing liquid is pure water.

30. A method of forming a resist pattern on a substrate, comprising:  
forming a resist film on the substrate;  
supplying a developing solution onto the resist film;  
submerging the resist film formed on the substrate in a rinsing liquid; and  
applying ultrasonic vibration to the rinsing liquid to rinse the developing solution from the resist film submerged in the rinsing liquid.

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A method of forming a resist pattern on a substrate, comprising:  
forming a resist film on the substrate;  
supplying a developing solution onto the resist film;  
providing a rinsing liquid onto the substrate so as to cover the resist film; and  
applying ultrasonic vibration to the rinsing liquid to rinse the developing solution from the resist film submerged in the rinsing liquid.

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A method of forming a resist pattern on a substrate, comprising:  
forming a resist film on the substrate;  
supplying a developing solution onto the resist film;  
supplying the resist film formed on the substrate with a rinsing liquid; and  
applying ultrasonic vibration to the rinsing liquid to rinse the developing solution  
from the resist film submerged in the rinsing liquid.--

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TO BE REPRODUCED